

## ABSTRACT OF THE DISCLOSURE

1           An objective for a microlithography projection  
2   system has at least one fluoride crystal lens. The effects  
3   of birefringence, which are detrimental to the image  
4   quality, are reduced if the lens axis of the crystal lens  
5   is oriented substantially perpendicular to the {100}-planes  
6   or {100}-equivalent crystallographic planes of the fluoride  
7   crystal. If two or more fluoride crystal lenses are used,  
8   they should have lens axes oriented in the (100)-, (111)-,  
9   or (110)-direction of the crystallographic structure, and  
10   they should be oriented at rotated positions relative to  
11   each other. The birefringence-related effects are further  
12   reduced by using groups of mutually rotated (100)-lenses in  
13   combination with groups of mutually rotated (111)- or  
14   (110)-lenses. A further improvement is also achieved by  
15   applying a compensation coating to at least one optical  
16   element of the objective.

(Fig. 1)